

Use Attainability Analysis

for

WBID 2212 Horrell Creek

Submitted by
MEC Water Resources, Inc.

To
Missouri Department of Natural Resources
Water Protection Program

Date Received: October 22, 2007

Notes

Horrell Creek (WBID 2212) is a 1.5 long class C stream, which is located away a relatively long distance from any road crossing, which makes accessing the stream difficult. Our survey focused on the downstream two-third of Horrell Creek because that is where we got land owner access to the stream.

Weather Conditions

Weather conditions ten days previous to stream assessment are listed in the tables below. The date(s) that the stream was assessed are shaded.

Data from the Midwest Regional Climate Center
Jackson, Missouri - Station ID: 234226

Date	Precipitation (Inches)	Min. Temp (°F)	Max. Temp (°F)	Avg. Temp (°F)
08/18/2007	0.19	71	93	82
08/19/2007	0.00	71	93	82
08/20/2007	0.72	67	97	82
08/21/2007	0.00	67	96	82
08/22/2007	0.00	60	84	72
08/23/2007	0.00	60	84	72
08/24/2007	0.00	60	86	73
08/25/2007	0.00	61	87	74
08/26/2007	0.00	61	88	75
08/27/2007	0.00	65	91	78
08/28/2007	0.32	72	93	83

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	Horrel Creek		
Missouri Water Body Identification (WBID) Number:	2212		
8-digit HUC:	07140107	County:	Cape Girardeau
Upstream Legal Description (from Table H):	2, 32 N, 12 E		
Downstream Legal Description (from Table H):	Sec 233, 32, N 12 E		
Number of sites evaluated	3		
List all sites numbers, listed consequently upstream to downstream:	Sites 1, 2, 3		

II. Subsegmentation (fill this section out only in cases where subsegmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Upstream Coordinates:		Downstream Coordinates:	
UTM X	Y	UTM X	Y
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± _____ Feet or ± _____ Meters		
PDOP		± _____ Feet or ± _____ Meters	

III. Discharger Facility Information (list all permitted dischargers on the stream)

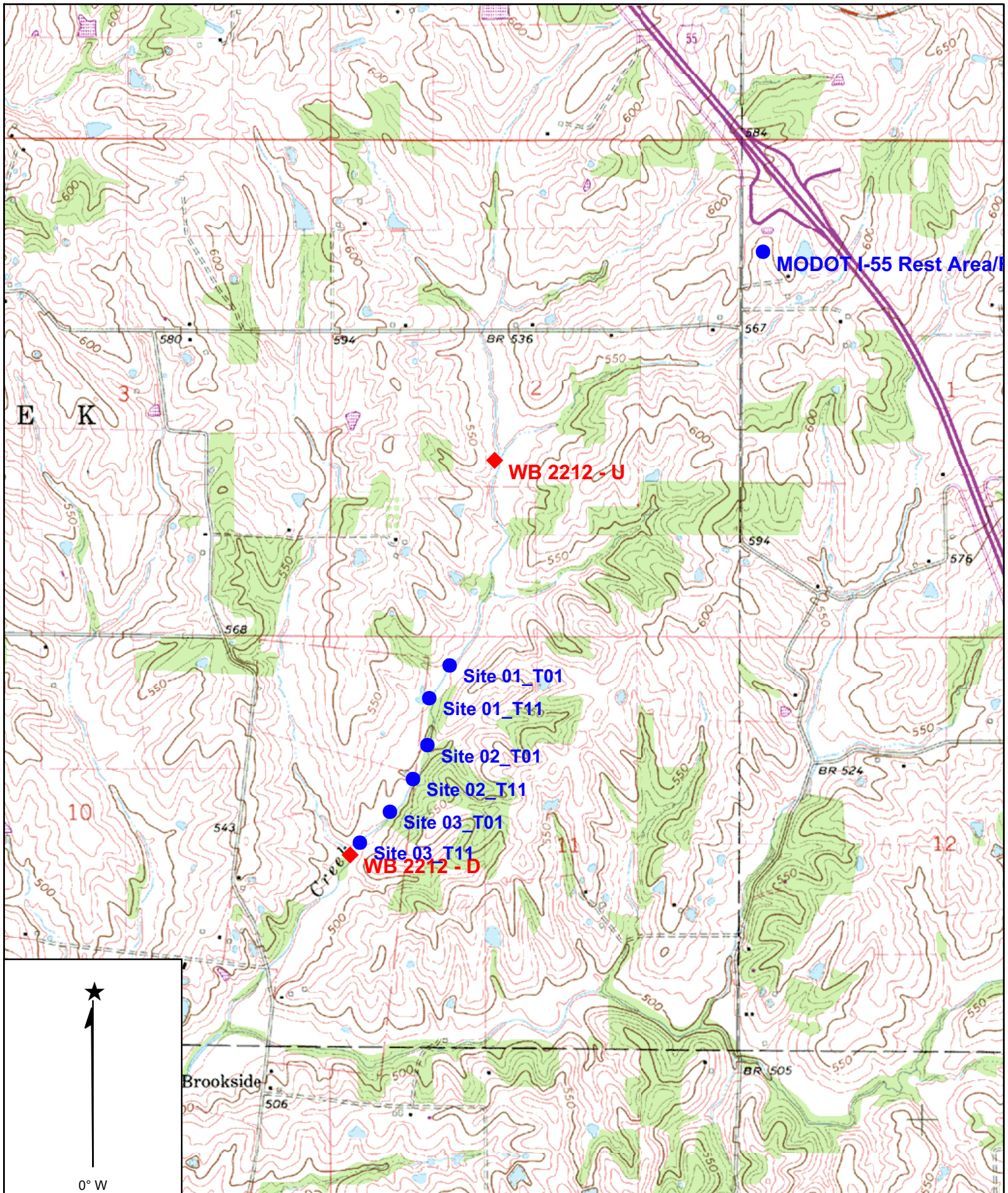
Discharger Facility Name(s):	MO DOT I-55 Rest Area / Fruitland
Discharger Permit Number(s):	MO 0094021

IV. UAA Surveyor (please print legibly)

Name of Surveyor	Robert Bacon	Telephone Number:	(573) 634-7078
Organization/Employer:	ERC		
Position:	Field Manager		

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: Robert R Bacon Date: 8-28-2007



Name: JACKSON
Date: 10/17/2007
Scale: 1 inch equals 1538 feet

Location: 16 0262537 E 4151163 N

WBID# 2212
 Site# 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>8-28-2007 9:10</u>	Site Location Description (e.g., road crossing): <u>East of county road 439 south of county road 432</u>
Personnel (Data Collectors): <u>Bob Bacon</u>	
Current Weather Conditions: <u>78°F Sunny, clear, warm</u>	Facility Name: <u>MDOT I-55 Rest Area - Fruitland</u>
Weather Conditions for Past 10 days: <u>see weather sheet</u>	Permit Number: <u>MO 0094021</u>
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input checked="" type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>16 S 0262319</u>		Y: <u>4150909</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the location data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____ ± _____ Feet or ± _____ Meters	
EPE	± _____ Feet or ± <u>7</u> Meters		
PDOP			

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>I-008</u>	<u>downstream T01</u>	<u>I-007</u> <u>006</u> <u>Aug</u>	<u>Upstream T11</u>

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:

Comments:

WBID# 2212
Site# 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input checked="" type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments: <u>lots of cattle in stream - watering source</u>					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>5</u> % Cobble	<u>5</u> % Gravel	% Sand	% Silt	% Mud/Clay	<u>85</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

thick periphyton growth

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input checked="" type="checkbox"/> Other: <u>Turbid</u>
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input checked="" type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Robert D. B... Date of Survey: 8-28-2007

Organization: ERC Position: Field Manager

T11 - 007 Upsheim
T01 - 008 Downstream

ERC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>2212</u>		Site #: <u>01</u> (WBID Site#)	
Estimated Channel Incision: <u>.20</u> (meters) (height between low bank vegetation and water surface)			
GPS Location: <u>008</u>		<u>007</u>	
Transect 1		Transect 11	
UTM X: <u>1650262319</u> UTM Y: <u>4150909</u>		UTM X: <u>1650262236</u> UTM Y: <u>4150736</u>	
Accuracy (GPS Data Quality): +/- <u>7</u> (meters)		+/- <u>8</u> (meters)	
Average Stream Width: <u>4.0</u> (meters)		Length of Survey Segment: <u>150</u> (meters) (20x average stream width)	
Field Staff: <u>Bob Bacon</u>			

Water Quality Information	
Dissolved Oxygen:	<u>2.05</u> (mg/L)
DO Saturation:	<u>23.6</u> (% sat)
Specific Cond:	<u>564</u> (μS/cm)
Water Temperature:	<u>21.85</u> (°C)
Date:	<u>8-28-2007</u>
Time:	<u>9:10</u>

Measurement		Transect Cross-Section																					
		01		02		03		04		05		06		07		08		09		10		11	
		Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	.27	.14	.42	.01	.40	.09	.32	.12	.22	.02	.50	.28	.48	.02	.69	.10	.40	.06	.74	.21	.42	.11	
3	.54	.15	.84	.03	.80	.04	.64	.11	.44	.05	1.00	.22	.96	.01	1.39	.07	.80	.02	1.48	.26	.84	.19	
4	.81	.14	1.24	.03	1.20	.05	.96	.10	.66	.04	1.50	.25	1.44	0	2.07	.07	1.20	.03	2.22	.30	1.24	.16	
5	1.08	.03	1.68	.02	1.60	.07	1.28	.09	.88	.02	2.00	.22	1.92	0	2.76	.03	1.60	.01	2.96	.30	1.68	.12	
6	1.35	.04	2.10	.04	2.00	.06	1.60	.08	1.10	.02	2.50	.20	2.40	.02	3.45	.05	2.00	.01	3.70	.37	2.10	.10	
7	1.62	.05	2.52	.05	2.40	.06	1.92	.08	1.32	.04	3.00	.11	2.88	.02	4.14	.01	2.40	.02	4.44	.34	2.52	.09	
8	1.89	.08	2.94	.05	2.80	.04	2.24	.08	1.54	.03	3.50	.21	3.36	.04	4.83	.03	2.80	.01	5.18	.36	2.94	.08	
9	2.16	.09	3.36	.03	3.20	0	2.56	.08	1.76	.02	4.00	.26	3.84	.06	5.52	.02	3.20	.02	5.92	.08	3.36	.08	
10	2.43	.07	3.78	.08	3.60	0	2.88	.09	1.98	.02	4.50	.14	4.32	.02	6.21	.04	3.60	.07	6.66	.09	3.78	.04	
11	2.70	0	4.20	0	4.00	0	3.20	0	2.20	0	5.00	0	4.80	0	6.90	0	4.00	0	7.40	0	4.20	0	
Feature Type (riffle, run, or pool)	run		run		run		run		riffle		pool		riffle		riffle		riffle		pool		run		

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank and in order of up to downstream.

Signed: Robert D Bacon Date: 8-28-2007

WBID# 2205 ²²¹²
 Site# 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>8-28-2007 10:23</u>	Site Location Description (e.g., road crossing): <u>East of county road 439 & south of county road 432 to downstream of site 1</u>
Personnel (Data Collectors): <u>Bob Bacon</u>	Facility Name: <u>MO DOT I-55 Rest Area - Fruitland</u>
Current Weather Conditions: <u>Sunny, clear ~90°</u>	Permit Number: <u>MO 0094021</u>
Weather Conditions for Past 10 days: <u>See weather page</u>	
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input checked="" type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

T01

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>16S 026 2221</u>		Y: <u>4150611</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the location data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____ ± _____ Feet or ± _____ Meters	
EPE	± _____ Feet or ± <u>6</u> Meters		
PDOP			

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>I-009</u>	<u>Downstream T01</u>	<u>I-010</u>	<u>Upstream T11</u>

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments: <u>Fern beds and thick forest</u>				

WBID# 2212
Site# 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments: <u>None</u>					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	<u>20</u> % Gravel	% Sand	% Silt	% Mud/Clay	<u>80</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

Some slick periphyton growth however much less growth than @ site 1

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: [Signature] Date of Survey: 8-28-2007
Organization: ERC Position: Field Manager

T01 - 009 downstream
T11 - 010 upstream

ERC Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: <u>2212</u>		Site #: <u>02</u> (WBID Site#)	
Estimated Channel Incision: <u>.15</u> (meters) (height between low bank vegetation and water surface)			
GPS Location: <u>009</u>		<u>010</u>	
Transect 1		Transect 11	
UTM X: <u>165026221</u> UTM Y: <u>4150611</u>		UTM X: <u>165026253</u> UTM Y: <u>4150456</u>	
Accuracy (GPS Data Quality): +/- <u>6</u> (meters)		+/- <u>9</u> (meters)	
Average Stream Width: <u>6.0</u> (meters)		Length of Survey Segment: <u>150</u> (meters) (20x average stream width)	
Field Staff: <u>Bob Bacon</u>			

Water Quality Information	
Dissolved Oxygen:	<u>0.20</u> (mg/L)
DO Saturation:	<u>2.10</u> (% sat)
Specific Cond:	<u>587</u> (μS/cm)
Water Temperature:	<u>21.79</u> (°C)
Date:	<u>8-28-2007</u>
Time:	<u>10:23</u>

Transect Cross-Section																						
Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	.62	.11	.29	.07	.85	.32	.67	.08	.67	.14	.47	.01	.28	.18	.69	.03	.43	.02	.27	.03	.43	.02
3	1.24	.10	.58	.10	1.70	.17	1.34	0	1.24	.18	.94	.01	.57	.20	1.38	.01	.86	.01	.54	0	.86	.05
4	1.86	.08	.87	.09	2.55	0	2.01	.03	2.01	.20	1.41	0	.86	.19	2.07	.02	1.29	.02	.81	0	1.29	.06
5	2.48	.09	1.16	.08	3.40	.08	2.68	.08	2.68	.21	1.88	.02	1.14	.20	2.76	.01	1.72	.02	1.08	.07	1.72	.08
6	3.10	0	1.45	.09	4.25	.26	3.35	.26	3.35	.21	2.35	.02	1.42	.20	3.45	.02	2.15	.05	1.35	.10	2.15	.08
7	3.72	0	1.74	.09	5.10	.24	4.02	.24	4.02	.16	2.82	.04	1.71	.20	4.14	.01	2.58	.04	1.62	.09	2.58	.11
8	4.34	.01	2.03	.08	5.95	.23	4.69	.20	4.69	.06	3.29	.07	2.00	.19	4.83	.01	3.01	.03	1.89	.03	3.01	.14
9	4.96	.10	2.32	.06	6.80	.27	5.36	.20	5.36	.05	3.76	.03	2.28	.19	5.52	.03	3.44	.02	2.16	.02	3.44	.10
10	5.58	.29	2.61	.03	7.65	.26	6.03	.18	6.03	.04	4.23	.06	2.56	.18	6.21	.01	3.87	.01	2.43	.01	2.87	.05
11	6.20	0	2.90	0	8.50	0	6.70	0	6.70	0	4.70	0	2.85	0	6.90	0	4.30	0	2.70	0	4.30	0
Feature Type (riffle, run, or pool)	run		riffle		pool		run		run		riffle		run		riffle		riffle		riffle		run	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank and in order of up to drowstream.

Signed: Bob R Bacon Date: 8-28-2007

Note: site located in dense shade - thick riparian zone

WBID# 2212
 Site# 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization

(must be completed for each site)

Date & Time: <u>8-28-2007 13:00</u>	Site Location Description (e.g., road crossing): <u>East of county road 439 & south of county road 432</u>
Personnel (Data Collectors): <u>Bob Bacon</u>	<u>downstream of site 2 upstream of small tributary</u>
Current Weather Conditions: <u>100+ sunny, clear, hot</u>	Facility Name: <u>MODOT I-55 Rest Area - Freeland</u>
Weather Conditions for Past 10 days: <u>see weather sheet</u>	Permit Number: <u>MO 0094021</u>
Drought Conditions?: No drought <input type="checkbox"/> ; Phase I <input type="checkbox"/> ; Phase II <input checked="" type="checkbox"/> ; Phase III <input type="checkbox"/> ; Phase IV <input type="checkbox"/> ; Unknown <input type="checkbox"/>	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)			
Site GPS Coordinates: UTM X: <u>16S 0262074</u>		Y: <u>4150354</u>	
HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the location data.)			
Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			
HORIZONTAL ACCURACY ESTIMATE			
GPS Data Quality		Interpolation Data Quality	
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____	
EPE	± _____ Feet or ± <u>7</u> Meters	± _____ Feet or ± _____ Meters	
PDOP			

Photos:

Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)	Photo ID# (WBID Site# ##)	Photo Purpose and Direction (upstream, downstream, other)
<u>I-011</u>	<u>T11 - Upstream</u>	<u>I-012</u>	<u>T01 Downstream</u>

Uses Observed*: (Uses actually observed at time of survey.)

<input type="checkbox"/> Swimming	<input type="checkbox"/> Skin diving	<input type="checkbox"/> SCUBA diving	<input type="checkbox"/> Tubing	<input type="checkbox"/> Water skiing
<input type="checkbox"/> Wind surfing	<input type="checkbox"/> Kayaking	<input type="checkbox"/> Boating	<input type="checkbox"/> Wading	<input type="checkbox"/> Rafting
<input type="checkbox"/> Hunting	<input type="checkbox"/> Trapping	<input type="checkbox"/> Fishing	<input checked="" type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use <i>Data Sheet D- Recreational Use Interview</i> when conducting interviews.)				

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

<input type="checkbox"/> City/county parks	<input type="checkbox"/> Playgrounds	<input type="checkbox"/> MDC conservation lands	<input type="checkbox"/> Urban areas	<input type="checkbox"/> Campgrounds
<input type="checkbox"/> Boating accesses	<input type="checkbox"/> State parks	<input type="checkbox"/> National forests	<input type="checkbox"/> Nature trails	<input type="checkbox"/> Stairs/walkway
<input type="checkbox"/> No trespass sign	<input checked="" type="checkbox"/> Fence	<input type="checkbox"/> Steep slopes	<input type="checkbox"/> None of the above	<input type="checkbox"/> Other:
Comments: <u>pasture and woods</u>				

WBID# 2212
Site# 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B - Site Characterization (must be completed for each site)

Indications of Human Use*: (attach photos)

<input type="checkbox"/> Roads	<input type="checkbox"/> Rope swings	<input type="checkbox"/> Foot paths/prints	<input type="checkbox"/> Dock/platform	<input type="checkbox"/> Livestock Watering	<input type="checkbox"/> RV / ATV Tracks
<input type="checkbox"/> Camping Sites	<input type="checkbox"/> Fire pit/ring	<input type="checkbox"/> NPDES Discharge	<input type="checkbox"/> Fishing Tackle	<input type="checkbox"/> Other:	
Comments: <u>None</u>					

Stream Morphology:

Upstream View's Physical Descriptions: Is there any water present at this view? ☒ Yes ☐ No

If so, is there an obvious current? ☒ Yes ☐ No

Select one of the following channel features:

Channel Feature	Transect (#)	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE						
RUN						
POOL						

Downstream View's Physical Descriptions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

<u>5</u> % Cobble	<u>5</u> % Gravel	% Sand	% Silt	% Mud/Clay	<u>90</u> % Bedrock
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Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site.)

Water Characteristics*: (Mark all that apply.)

ODOR:	<input type="checkbox"/> Sewage	<input type="checkbox"/> Musky	<input type="checkbox"/> Chemical	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:
COLOR:	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Green	<input type="checkbox"/> Gray	<input type="checkbox"/> Milky	<input type="checkbox"/> Other:
BOTTOM DEPOSIT:	<input type="checkbox"/> Sludge	<input type="checkbox"/> Solids	<input type="checkbox"/> Fine sediments	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Other: <u>Periphyton</u>
WATER SURFACE DEPOSITION:	<input type="checkbox"/> Oil	<input type="checkbox"/> Scum	<input type="checkbox"/> Foam	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Other:

Comments: Please attach any additional comments to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that affect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Dale M. Brown Date of Survey: 8-28-2007

Organization: ERC Position: Field Manager

ERC Recreational Use Attainability Analysis Field Survey Sheet

T11 011 Upstream
T01 012 Downstream

Waterbody ID: <u>2212</u>		Site #: <u>03</u> (WBID Site#)	
Estimated Channel Incision: <u>.15</u> (meters) (height between low bank vegetation and water surface)			
GPS Location: <u>012</u>		<u>011</u>	
Transect 1		Transect 11	
UTM X: <u>1650262074</u> UTM Y: <u>4150254</u>		UTM X: <u>1650261932</u> UTM Y: <u>4150228</u>	
Accuracy (GPS Data Quality): +/- <u>7</u> (meters)		+/- <u>8</u> (meters)	
Average Stream Width: <u>6.0</u> (meters)		Length of Survey Segment: <u>150</u> (meters) (20x average stream width)	
Field Staff: <u>Bob Bacon</u>			

Water Quality Information	
Dissolved Oxygen:	<u>7.52</u> (mg/L)
DO Saturation:	<u>87.3</u> (% sat)
Specific Cond:	<u>556</u> (µS/cm)
Water Temperature:	<u>22.78</u> (°C)
Date:	<u>8-28-2007</u>
Time:	<u>13:00</u>

Transect Cross-Section																						
Measurement	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	.68	.26	.66	.06	.73	.05	.81	.11	1.01	.04	.84	.05	.60	.04	.68	.21	.84	.19	.72	.10	.45	.06
3	1.36	.28	1.32	.08	1.46	.08	1.62	.04	2.02	0	1.68	.05	1.20	.13	1.26	.19	1.68	.24	1.44	.12	.90	.10
4	2.04	.16	1.98	.09	2.19	.06	2.43	.03	3.03	.03	2.52	.08	1.80	.28	2.04	.05	2.52	.22	2.16	.08	1.35	.10
5	2.72	.14	2.64	.11	2.92	.23	3.24	.02	4.04	0	3.36	.09	2.40	.23	2.72	.05	3.36	.22	2.88	.13	1.80	.03
6	3.40	.08	3.30	.19	3.65	.25	4.05	.03	5.05	0	4.20	.14	3.00	0	3.40	.05	4.20	.08	3.60	.08	2.25	.03
7	4.08	.07	3.96	.29	4.38	.23	4.86	.03	6.06	.04	5.04	.11	3.60	0	4.08	.03	5.04	.04	4.32	.09	2.70	.08
8	4.76	.10	4.62	.26	5.11	0	5.67	.01	7.07	.08	5.88	.07	4.20	0	4.76	.01	5.88	.05	5.04	.22	3.15	.06
9	5.44	.17	5.28	.14	5.84	.12	6.48	.13	8.08	.11	6.72	.08	4.80	.01	5.44	.04	6.72	.18	5.76	.37	3.60	.06
10	6.12	.14	5.94	.02	6.57	.06	7.29	.04	9.09	.12	7.56	.24	5.40	.06	6.12	.03	7.56	.21	6.48	.11	4.05	.09
11	6.80	0	6.60	0	7.20	0	8.10	0	10.10	0	8.40	0	6.00	0	6.80	0	8.40	0	7.20	0	4.50	0
Feature Type (riffle, run, or pool)	run		run		run		run		riffle		run		sm pools		run		run		run		run	

Notes: Transects will be measured beginning on left descending bank and finishing on right descending bank and in order of up to drowstream.

Signed: Bob R Bacon Date: 8-28-2007

WBID# 2212



Site# 1 Photo ID# I-008, Downstream



Site# 1 Photo ID# I-007, Upstream



Site# 2 Photo ID# I-009, Downstream



Site# 2 Photo ID# I-010, Upstream

WBID# 2212



Site# 3 Photo ID# I-011, Upstream



Site#3 Photo ID# I-012, Downstream